FIG. 1A

SEQ.ID.NO.5.
Human VR3A+B- nucleotide sequence of the coding sequence (2616 bp).

ATGGCGGATTCCAGCGAAGGCCCCCGCGCGGGGCCCGGGGAGGTGGCTGAG
CTCCCCGGGGATGAGAGTGGCACCCCAGGTGGGGAGGCTTTTCCTCTCTCC
TCCCTGGCCAATCTGTTTGAGGGGGAGGATGGCTCCCTTTCGCCCTCACCG
GCTGATGCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGC
ATGAAGTTCCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTG
CTGGAGTCCACCCTATATGAGTCCTCGGTGGTGCCTGGGCCCAAGAAAGCA
CCCATGGACTCACTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGAC
AACAAGAGGTGGAGGAAGAAGATCATAGAGAAGCAGCCGCAGAGCCCCAAA
GCCCCTGCCCCTCAGCCGCCCCCCATCCTCAAAGTCTTCAACCGGCCTATC
CTCTTTGACATCGTGTCCCGGGGCTCCACTGCTGACCTGGACGGGCTGCTC
CCATTCTTGCTGACCCACAAGAAACGCCTAACTGATGAGGAGTTTCGAGAG
CCATCTACGGGGAAGACCTGCCTGCCCAAGGCCTTGCTGAACCTGAGCAAT
GGCCGCAACGACACCATCCCTGTGCTGCTGGACATCGCGGAGCGCACCGGC
AACATGCGGGAGTTCATTAACTCGCCCTTCCGTGACATCTACTATCGAGGT
CAGACAGCCCTGCACATCGCCATTGAGCGTCGCTGCAAACACTACGTGGAA
CTTCTCGTGGCCCAGGGAGCTGATGTCCACGCCCAGGCCCGTGGGCGCTTC
TTCCAGCCCAAGGATGAGGGGGGCTACTTCTACTTTGGGGAGCTGCCCCTG
TCGCTGGCTGCCTGCACCAACCAGCCCCACATTGTCAACTACCTGACGGAG
AACCCCCACAAGAAGGCGGACATGCGGCGCCAGGACTCGCGAGGCAACACA
GTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCGTGAGAACACCAAG
TTTGTTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTGCCCGCCTCTTC
CCCGACAGCAACCTGGAGGCCGTGCTCAACAACGACGGCCTCTCGCCCCTC
ATGATGGCTGCCAAGACGGGCAAGATTGGGATCTTTCAGCACATCATCCGG
CGGGAGGTGACGGATGAGGACACACGGCACCTGTCCCGCAAGTTCAAGGAC
TGGGCCTATGGGCCAGTGTATTCCTCGCTTTATGACCTCTCCTCCCTGGAC
ACGTGTGGGGAAGAGGCCTCCGTGCTGGAGATCCTGGTGTACAACAGCAAG
ATTGAGAACCGCCACGAGATGCTGGCTGTGGAGCCCATCAATGAACTGCTG
CGGGACAAGTGGCGCAAGTTCGGGGCCGTCTCCTTCTACATCAACGTGGTC
TCCTACCTGTGTGCCATGGTCATCTTCACTCTCACCGCCTACTACCAGCCG
CTGGAGGGCACACCGCCGTACCCTTACCGCACCACGGTGGACTACCTGCGG
CTGGCTGGCGAGGTCATTACGCTCTTCACTGGGGTCCTGTTCTTCATCACC
AACATCAAAGACTTGTTCATGAAGAAATGCCCTGGAGTGAATTCTCTCTTC
ATTGATGGCTCCTTCCAGCTGCTCTACTTCATCTACTCTGTCCTGGTGATC
GTCTCAGCAGCCCTCTACCTGGCAGGGATCGAGGCCTACCTGGCCGTGATG

FIG. 1B

GTCTTTGCCCTGGTCCTGGGCTGGATGAATGCCCTTTACTTCACCCGTGGG
CTGAAGCTGACGGGGACCTATAGCATCATGATCCAGAAGATTCTCTTCAAG
GACCTTTTCCGATTCCTGCTCGTCTACTTGCTCTTCATGATCGGCTACGCT
TCAGCCCTGGTCTCCCTCCTGAACCCGTGTGCCAACATGAAGGTGTGCAAT
GAGGACCAGACCAACTGCACAGTGCCCACTTACCCCTCGTGCCGTGACAGC
GAGACCTTCAGCACCTTCCTCCTGGACCTGTTTAAGCTGACCATCGGCATG
GGCGACCTGGAGATGCTGAGCAGCACCAAGTACCCCGTGGTCTTCATCATC
CTGCTGGTGACCTACATCATCCTCACCTTTGTGCTGCTCCTCAACATGCTC
ATTGCCCTCATGGGCGAGACAGTGGGCCAGGTCTCCAAGGAGAGCAAGCAC
ATCTGGAAGCTGCAGTGGGCCACCACCATCCTGGACATTGAGCGCTCCTTC
CCCGTATTCCTGAGGAAGGCCTTCCGCTCTGGGGAGATGGTCACCGTGGGC
AAGAGCTCGGACGGCACTCCTGACCGCAGGTGGTGCTTCAGGGTGGATGAG
GTGAACTGGTCTCACTGGAACCAGAACTTGGGCATCATCAACGAGGACCCG
GGCAAGAATGAGACCTACCAGTATTATGGCTTCTCGCATACCGTGGGCCGC
CTCCGCAGGGATCGCTGGTCCTCGGTGGTACCCCGCGTGGTGGAACTGAAC
AAGAACTCGAACCCGGACGAGGTGGTGGTGCCTCTGGACAGCATGGGGAAC
CCCCGCTGCGATGGCCACCAGCAGGGTTACCCCCGCAAGTGGAGGACTGAT
GACGCCCCGCTCTAG

FIG. 2A

SEQ.ID.NO.6.
The nucleotide sequence of human VR3A+B- is shown including 337 bp 5' UT and 547 bp 3'UT.

CAATTGGGATTTAAACCCAGGGACTATCCAGCCCCAAAGCCCTTCCCACCAC
ACCAGGTGGCCTGTCCTGGGGCCAGCTCTGCACACAGGGCCTGGTGCCCCCG
GGGTGCTTGGGAAGTGGCAGGGCAGAGGTGGGCCCTGTGGCTGTTCTGGCTC
AGCTTCTAAAACAAGAGCCTCTGCTGGGGGCAGAGGGGCCGTGAACCCCTGA
AATGTTAGGCAGATACCCTGTGGGAGCTTTGTTCTGGGATGCTAAGAACCGC
TTGAGGATTTAAGCTTTGCCACTTTGGCTCCGGAGCAAGGGCAGAGGCTGAG
CAGTGCAGACGGGCCTGGGGCAGGCATGGCGGATTCCAGCGAAGGCCCCCGC
GCGGGGCCCGGGGAGGTGGCTGAGCTCCCCGGGGATGAGAGTGGCACCCCAG
GTGGGGAGGCTTTTCCTCTCTCCTCCCTGGCCAATCTGTTTGAGGGGGAGGA
TGGCTCCCTTTCGCCCTCACCGGCTGATGCCAGTCGCCCTGCTGGCCCAGGC
GATGGGCGACCAAATCTGCGCATGAAGTTCCAGGGCGCCTTCCGCAAGGGGG
TGCCCAACCCCATCGATCTGCTGGAGTCCACCCTATATGAGTCCTCGGTGGT
GCCTGGGCCCAAGAAAGCACCCATGGACTCACTGTTTGACTACGGCACCTAT
CGTCACCACTCCAGTGACAACAAGAGGTGGAGGAAGAAGATCATAGAGAAGC
AGCCGCAGAGCCCCAAAGCCCCTGCCCCTCAGCCGCCCCCCATCCTCAAAGT
CTTCAACCGGCCTATCCTCTTTGACATCGTGTCCCGGGGCTCCACTGCTGAC
CTGGACGGGCTGCTCCCATTCTTGCTGACCCACAAGAAACGCCTAACTGATG
AGGAGTTTCGAGAGCCATCTACGGGGAAGACCTGCCTGCCCAAGGCCTTGCT
GAACCTGAGCAATGGCCGCAACGACACCATCCCTGTGCTGCTGGACATCGCG
GAGCGCACCGGCAACATGCGGGAGTTCATTAACTCGCCCTTCCGTGACATCT
ACTATCGAGGTCAGACAGCCCTGCACATCGCCATTGAGCGTCGCTGCAAACA
CTACGTGGAACTTCTCGTGGCCCAGGGAGCTGATGTCCACGCCCAGGCCCGT
GGGCGCTTCTTCCAGCCCAAGGATGAGGGGGGCTACTTCTACTTTGGGGAGC
TGCCCCTGTCGCTGGCTGCCTGCACCAACCAGCCCCACATTGTCAACTACCT
GACGGAGAACCCCCACAAGAAGGCGGACATGCGGCGCCAGGACTCGCGAGGC
AACACAGTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCGTGAGAACA
CCAAGTTTGTTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTGCCCGCCT
CTTCCCCGACAGCAACCTGGAGGCCGTGCTCAACAACGACGGCCTCTCGCCC
CTCATGATGGCTGCCAAGACGGGCAAGATTGGGATCTTTCAGCACATCATCC
GGCGGGAGGTGACGGATGAGGACACACGGCACCTGTCCCGCAAGTTCAAGGA
CTGGGCCTATGGGCCAGTGTATTCCTCGCTTTATGACCTCTCCTCCCTGGAC
ACGTGTGGGGAAGAGGCCTCCGTGCTGGAGATCCTGGTGTACAACAGCAAGA
TTGAGAACCGCCACGAGATGCTGGCTGTGGAGCCCATCAATGAACTGCTGCG
GGACAAGTGGCGCAAGTTCGGGGCCGTCTCCTTCTACATCAACGTGGTCTCC
TACCTGTGTGCCATGGTCATCTTCACTCTCACCGCCTACTACCAGCCGCTGG
AGGGCACACCGCCGTACCCTTACCGCACCACGGTGGACTACCTGCGGCTGGC

FIG. 2B

TGGCGAGGTCATTACGCTCTTCACTGGGGTCCTGTTCTTCATCACCAACATC
AAAGACTTGTTCATGAAGAAATGCCCTGGAGTGAATTCTCTCTTCATTGATG
GCTCCTTCCAGCTGCTCTACTTCATCTACTCTGTCCTGGTGATCGTCTCAGC
AGCCCTCTACCTGGCAGGGATCGAGGCCTACCTGGCCGTGATGGTCTTTGCC
CTGGTCCTGGGCTGGATGAATGCCCTTTACTTCACCCGTGGGCTGAAGCTGA
CGGGGACCTATAGCATCATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCG
ATTCCTGCTCGTCTACTTGCTCTTCATGATCGGCTACGCTTCAGCCCTGGTC
TCCCTCCTGAACCCGTGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCA
ACTGCACAGTGCCCACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCAC
CTTCCTCCTGGACCTGTTTAAGCTGACCATCGGCATGGGCGACCTGGAGATG
CTGAGCAGCACCAAGTACCCCGTGGTCTTCATCATCCTGCTGGTGACCTACA
TCATCCTCACCTTTGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGA
GACAGTGGGCCAGGTCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGTGG
GCCACCACCATCCTGGACATTGAGCGCTCCTTCCCCGTATTCCTGAGGAAGG
CCTTCCGCTCTGGGGAGATGGTCACCGTGGGCAAGAGCTCGGACGGCACTCC
TGACCGCAGGTGGTGCTTCAGGGTGGATGAGGTGAACTGGTCTCACTGGAAC
CAGAACTTGGGCATCATCAACGAGGACCCGGGCAAGAATGAGACCTACCAGT
ATTATGGCTTCTCGCATACCGTGGGCCGCCTCCGCAGGGATCGCTGGTCCTC
GGTGGTACCCCGCGTGGTGGAACTGAACAAGAACTCGAACCCGGACGAGGTG
GTGGTGCCTCTGGACAGCATGGGGAACCCCCGCTGCGATGGCCACCAGCAGG
GTTACCCCCGCAAGTGGAGGACTGATGACGCCCCGCTCTAGGGACTGCAGCC
CAGCCCCAGCTTCTCTGCCCACTCATTTCTAGTCCAGCCGCATTTCAGCAGT
GCCTTCTGGGGTGTCCCCCCACACCCTGCTTTGGCCCCAGAGGCGAGGGACC
AGTGGAGGTGCCAGGGAGGCCCCAGGACCCTGTGGTCCCCTGGCTCTGCCTC
CCCACCCTGGGGTGGGGGCTCCCGGCCACCTGTCTTGCTCCTATGGAGTCAC
ATAAGCCAACGCCAGAGCCCCTCCACCTCAGGCCCCAGCCCCTGCCTCTCCA
TTATTTATTTGCTCTGCTCTCAGGAAGCGACGTGACCCCTGCCCCAGCTGGA
ACCTGGCAGAGGCCTTAGGACCCCGTTCCAAGTGCACTGCCCGGCCAAGCCC
CAGCCTCAGCCTGCGCCTGAGCTGCATGCGCCACCATTTTTGGCAGCGTGGC
AGCTTTGCAAGGGGCTGGGGCCCTCGGCGTGGGGCCATGCCTTCTGTGTGTT
CTGTAGTGTCTGGGATTTGCCGGTGCTCAATAAATGTTTATTCATTGACGGT
GGAAAAAAAAAAAAAA

FIG. 3

SEQ.ID.NO.7.
Coding sequence for human VR3A+B- (871 amino acids)

MADSSEGPRAGPGEVAELPGDESGTPGGEAFPLSSLANLFEGEDGSLSPSP
ADASRPAGPGDGRPNLRMKFQGAFRKGVPNPIDLLESTLYESSVVPGPKKA
PMDSLFDYGTYRHHSSDNKRWRKKIIEKQPQSPKAPAPQPPPILKVFNRPI
LFDIVSRGSTADLDGLLPFLLTHKKRLTDEEFREPSTGKTCLPKALLNLSN
GRNDTIPVLLDIAERTGNMREFINSPFRDIYYRGQTALHIAIERRCKHYVE
LLVAQGADVHAQARGRFFQPKDEGGYFYFGELPLSLAACTNQPHIVNYLTE
NPHKKADMRRQDSRGNTVLHALVAIADNTRENTKFVTKMYDLLLLKCARLF
PDSNLEAVLNNDGLSPLMMAAKTGKIGIFQHIIRREVTDEDTRHLSRKFKD
WAYGPVYSSLYDLSSLDTCGEEASVLEILVYNSKIENRHEMLAVEPINELL
RDKWRKFGAVSFYINVVSYLCAMVIFTLTAYYQPLEGTPPYPYRTTVDYLR
LAGEVITLFTGVLFFITNIKDLFMKKCPGVNSLFIDGSFQLLYFIYSVLVI
VSAALYLAGIEAYLAVMVFALVLGWMNALYFTRGLKLTGTYSIMIQKILFK
DLFRFLLVYLLFMIGYASALVSLLNPCANMKVCNEDQTNCTVPTYPSCRDS
ETFSTFLLDLFKLTIGMGDLEMLSSTKYPV*VFIILLVTYIILTFVLLLNML*
IALMGETVGQVSKESKHIWKLQWATTILDIERSFPVFLRKAFRSGEMVTVG
KSSDGTPDRRWCFRVDEVNWSHWNQNLGIINEDPGKNETYQYYGFSHTVGR
LRRDRWSSVVPRVVELNKNSNPDEVVVPLDSMGNPRCDGHQQGYPRKWRTDDAPL

FIG. 4A

SEQ.ID.NO.8.
Human VR3A-B- nucleotide sequence of the coding sequence (2436 bp).

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ATGGCGGATTCCAGCGAAGGCCCCCGCGCGGGGCCCGGGGAGGTGGCTGAG
CTCCCCGGGGATGAGAGTGGCACCCCAGGTGGGGAGGCTTTTCCTCTCTCC
TCCCTGGCCAATCTGTTTGAGGGGGAGGATGGCTCCCTTTCGCCCTCACCG
GCTGATGCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGC
ATGAAGTTCCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTG
CTGGAGTCCACCCTATATGAGTCCTCGGTGGTGCCTGGGCCCAAGAAAGCA
CCCATGGACTCACTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGAC
AACAAGAGGTGGAGGAAGAAGATCATAGAGAAGCAGCCGCAGAGCCCCAAA
GCCCCTGCCCCTCAGCCGCCCCCCATCCTCAAAGTCTTCAACCGGCCTATC
CTCTTTGACATCGTGTCCCGGGGCTCCACTGCTGACCTGGACGGGCTGCTC
CCATTCTTGCTGACCCACAAGAAACGCCTAACTGATGAGGAGTTTCGAGAG
CCATCTACGGGGAAGACCTGCCTGCCCAAGGCCTTGCTGAACCTGAGCAAT
GGCCGCAACGACACCATCCCTGTGCTGCTGGACATCGCGGAGCGCACCGGC
AACATGCGGGAGTTCATTAACTCGCCCTTCCGTGACATCTACTATCGAGGT
CAGACAGCCCTGCACATCGCCATTGAGCGTCGCTGCAAACACTACGTGGAA
CTTCTCGTGGCCCAGGGAGCTGATGTCCACGCCCAGGCCCGTGGGCGCTTC
TTCCAGCCCAAGGATGAGGGGGGCTACTTCTACTTTGGGGAGCTGCCCCTG
TCGCTGGCTGCCTGCACCAACCAGCCCCACATTGTCAACTACCTGACGGAG
AACCCCCACAAGAAGGCGGACATGCGGCGCCAGGACTCGCGAGGCAACACA
GTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCGTGAGAACACCAAG
TTTGTTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTGCCCGCCTCTTC
CCCGACAGCAACCTGGAGGCCGTGCTCAACAACGACGGCCTCTCGCCCCTC
ATGATGGCTGCCAAGACGGGCAAGATTGAGAACCGCCACGAGATGCTGGCT
GTGGAGCCCATCAATGAACTGCTGCGGGACAAGTGGCGCAAGTTCGGGGCC
GTCTCCTTCTACATCAACGTGGTCTCCTACCTGTGTGCCATGGTCATCTTC
ACTCTCACCGCCTACTACCAGCCGCTGGAGGGCACACCGCCGTACCCTTAC
CGCACCACGGTGGACTACCTGCGGCTGGCTGGCGAGGTCATTACGCTCTTC
ACTGGGGTCCTGTTCTTCATCACCAACATCAAAGACTTGTTCATGAAGAAA
TGCCCTGGAGTGAATTCTCTCTTCATTGATGGCTCCTTCCAGCTGCTCTAC
TTCATCTACTCTGTCCTGGTGATCGTCTCAGCAGCCCTCTACCTGGCAGGG
ATCGAGGCCTACCTGGCCGTGATGGTCTTTGCCCTGGTCCTGGGCTGGATG
AATGCCCTTTACTTCACCCGTGGGCTGAAGCTGACGGGGACCTATAGCATC
```

FIG. 4B

ATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCGATTCCTGCTCGTCTAC
TTGCTCTTCATGATCGGCTACGCTTCAGCCCTGGTCTCCCTCCTGAACCCG
TGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCAACTGCACAGTGCCC
ACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCACCTTCCTCCTGGAC
CTGTTTAAGCTGACCATCGGCATGGGCGACCTGGAGATGCTGAGCAGCACC
AAGTACCCCGTGGTCTTCATCATCCTGCTGGTGACCTACATCATCCTCACC
TTTGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGAGACAGTGGGC
CAGGTCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGTGGGCCACCACC
ATCCTGGACATTGAGCGCTCCTTCCCCGTATTCCTGAGGAAGGCCTTCCGC
TCTGGGGAGATGGTCACCGTGGGCAAGAGCTCGGACGGCACTCCTGACCGC
AGGTGGTGCTTCAGGGTGGATGAGGTGAACTGGTCTCACTGGAACCAGAAC
TTGGGCATCATCAACGAGGACCCGGGCAAGAATGAGACCTACCAGTATTAT
GGCTTCTCGCATACCGTGGGCCGCCTCCGCAGGGATCGCTGGTCCTCGGTG
GTACCCCGCGTGGTGGAACTGAACAAGAACTCGAACCCGGACGAGGTGGTG
GTGCCTCTGGACAGCATGGGGAACCCCCGCTGCGATGGCCACCAGCAGGGT
TACCCCCGCAAGTGGAGGACTGATGACGCCCCGCTCTAG

FIG. 5

SEQ.ID.NO.9.
Coding sequence for human VR3A-B- (811 amino acids)

MADSSEGPRAGPGEVAELPGDESGTPGGEAFPLSSLANLFEGEDGSLSPSP
ADASRPAGPGDGRPNLRMKFQGAFRKGVPNPIDLLESTLYESSVVPGPKKA
PMDSLFDYGTYRHHSSDNKRWRKKIIEKQPQSPKAPAPQPPPILKVFNRPI
LFDIVSRGSTADLDGLLPFLLTHKKRLTDEEFREPSTGKTCLPKALLNLSN
GRNDTIPVLLDIAERTGNMREFINSPFRDIYYRGQTALHIAIERRCKHYVE
LLVAQGADVHAQARGRFFQPKDEGGYFYFGELPLSLAACTNQPHIVNYLTE
NPHKKADMRRQDSRGNTVLHALVAIADNTRENTKFVTKMYDLLLLKCARLF
PDSNLEAVLNNDGLSPLMMAAKTGKIENRHEMLAVEPINELLRDKWRKFGA
VSFYINVVSYLCAMVIFTLTAYYQPLEGTPPYPYRTTVDYLRLAGEVITLF
TGVLFFITNIKDLFMKKCPGVNSLFIDGSFQLLYFIYSVLVIVSAALYLAG
IEAYLAVMVFALVLGWMNALYFTRGLKLTGTYSIMIQKILFKDLFRFLLVY
LLFMIGYASALVSLLNPCANMKVCNEDQTNCTVPTYPSCRDSETFSTFLLD
LFKLTIGMGDLEMLSSTKYPVVFIILLVTYIILTFVLLLNMLIALMGETVG
QVSKESKHIWKLQWATTILDIERSFPVFLRKAFRSGEMVTVGKSSDGTPDR
RWCFRVDEVNWSHWNQNLGIINEDPGKNETYQYYGFSHTVGRLRRDRWSSV
VPRVVELNKNSNPDEVVVPLDSMGNPRCDGHQQGYPRKWRTDDAPL

FIG. 6

SEQ.ID.NO.10.
Human VR3A+B+ nucleotide sequence of the coding sequence (2229 bp).

ATGGCGGATTCCAGCGAAGGCCCCCGCGCGGGGCCCGGGGAGGTGGCTGAGCT
CCCCGGGGATGAGAGTGGCACCCCAGGTGGGGAGGCTTTTCCTCTCTCCTCCC
TGGCCAATCTGTTTGAGGGGGAGGATGGCTCCCTTTCGCCCTCACCGGCTGAT
GCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGCATGAAGTT
CCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTGCTGGAGTCCA
CCCTATATGAGTCCTCGGTGGTGCCTGGGCCCAAGAAAGCACCCATGGACTCA
CTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGACAACAAGAGGTGGAG
GAAGAAGATCATAGAGAAGCAGCCGCAGAGCCCCAAAGCCCCTGCCCCTCAGC
CGCCCCCCATCCTCAAAGTCTTCAACCGGCCTATCCTCTTTGACATCGTGTCC
CGGGGCTCCACTGCTGACCTGGACGGGCTGCTCCCATTCTTGCTGACCCACAA
GAAACGCCTAACTGATGAGGAGTTTCGAGAGCCATCTACGGGGAAGACCTGCC
TGCCCAAGGCCTTGCTGAACCTGAGCAATGGCCGCAACGACACCATCCCTGTG
CTGCTGGACATCGCGGAGCGCACCGGCAACATGAGGGAGTTCATTAACTCGCC
CTTCCGTGACATCTACTATCGAGGTCAGACAGCCCTGCACATCGCCATTGAGC
GTCGCTGCAAACACTACGTGGAACTTCTCGTGGCCCAGGGAGCTGATGTCCAC
GCCCAGGCCCGTGGGCGCTTCTTCCAGCCCAAGGATGAGGGGGGCTACTTCTA
CTTTGGGGAGCTGCCCCTGTCGCTGGCTGCCTGCACCAACCAGCCCCACATTG
TCAACTACCTGACGGAGAACCCCCACAAGAAGGCGGACATGCGGCGCCAGGAC
TCGCGAGGCAACACAGTGCTGCATGCGCTGGTGGCCATTGCTGACAACACCCG
TGAGAACACCAAGTTTGTTACCAAGATGTACGACCTGCTGCTGCTCAAGTGTG
CCCGCCTCTTCCCCGACAGCAACCTGGAGGCCGTGCTCAACAACGACGGCCTC
TCGCCCCTCATGATGGCTGCCAAGACGGGCAAGATTGGGATCTTTCAGCACAT
CATCCGGCGGGAGGTGACGGATGAGGACACACGGCACCTGTCCCGCAAGTTCA
AGGACTGGGCCTATGGGCCAGTGTATTCCTCGCTTTATGACCTCTCCTCCCTG
GACACGTGTGGGGAAGAGGCCTCCGTGCTGGAGATCCTGGTGTACAACAGCAA
GATTGAGAACCGCCACGAGATGCTGGCTGTGGAGCCCATCAATGAACTGCTGC
GGGACAAGTGGCGCAAGTTCGGGGCCGTCTCCTTCTACATCAACGTGGTCTCC
TACCTGTGTGCCATGGTCATCTTCACTCTCACCGCCTACTACCAGCCGCTGGA
GGGCACACCGCCGTACCCTTACCGCACCACGGTGGACTACCTGCGGCTGGCTG
GCGAGGTCATTACGCTCTTCACTGGGGTCCTGTTCTTCTTCACCAACATCAAA
GACTTGTTCATGAAGAAATGCCCTGGAGTGAATTCTCTCTTCATTGATGGCTC
CTTCCAGCTGCTCTACTTCATCTACTCTGTCCTGGTGATCGTCTCAGCAGCCC
TCTACCTGGCAGGGATCGAGGCCTACCTGGCCGTGATGGTCTTTGCCCTGGTC
CTGGGCTGGATGAATGCCCTTTACTTCACCCGTGGGCTGAAGCTGACGGGGAC
CTATAGCATCATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCGATTCCTGC
TCGTCTACTTGCTCTTCATGATCGGCTACGCTTCAGCCCTGGTCTCCCTCCTG
AACCCGTGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCAACTGCACAGT
GCCCACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCACCTTCCTCCTGG
ACCTGTTTAAGCTGACCATCGGCATGGGCGACCTGGAGATGCTGAGCAGCACC
AAGTACCCCGTGGTCTTCATCATCCTGCTGGTGACCTACATCATCCTCACCTT
TGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGAGACAGTGGGCCAGG
TCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGAGCGGCAGGCGCAGGCTGTGA

FIG. 7A

SEQ.ID.NO.11.
The nucleotide sequence of human VR3A+B+ is shown including 836 bp 5' UT and 994 bp 3'UT.

TGTGCAGGCCAGGGAGGGCTTTCCAGAGGAGCCCAGTTGAGCTGGAACACCA
GTGGGGAGGAGTTGACCAGCAAAGGTGCAGGGAGGGATCAGCACTTTGCACT
GGGGAGCAGAGTTTGTGCACTGGGGAAGTCAACTCAAGTATTGGAGCCTCAG
TTTCCTGTTCTGTAAAATGGGTTCATCATGACAGTGTTTGATGAGGAAAAGG
ACTGCCGGCCTACACAGCAAGTCCACATGGATTTTCTGAGCCCCTCCTGTGC
CTGAAGCCCACGGTTAATGGTTCTGCCTTAGCAGGTGCTTACCACGTGCCAG
GCACTGCACTGCACTGGCCACTGGACTGCATGTTCTGTCCATGAGGCTTGGA
TATCCCCATCTTACAGATCAGGAAGCTGAGGCTATGAAATGTCGACTTGCTC
AATGTCATGGAATGACTAAGTGTGGAGCCTGGATTTGAACTTGGCTCTCTGG
GGCTCCAAAGCTGGCTTTCTTGGTCAGCAGTAGGGTCTGGGATCCAAGTATG
GGGTCCCAGCTTGACCCTGAAGTCCACCCTCTTTCAGCTAATGCCCAAGGTA
GTTGGACCTGGGGCCAATTTGTGTTTCCAGGTTCGTGAAAGAGCTCCTGTTG
CAGTTCCCGCCTGAGGCTTGGCGGCCAACCACATCTGGGAGTGGCCTCCCTG
TGCCCCTGTCATTACAACGGTGGCTTTGAAGCAGCTGGCAGCACTGCTGCTT
GTCCACGTGGAAGGGGGCTTCCTGGAGCCCCCGCCCCTGGCCGGGTTCTGCC
TGACTCCCCTTTCATTCCCTTGCAGGCTGAGCAGTGCAGACGGGCCTGGGGC
AGGCATGGCGGATTCCAGCGAAGGCCCCCGCGCGGGGCCCGGGGAGGTGGCT
GAGCTCCCCGGGGATGAGAGTGGCACCCCAGGTGGGGAGGCTTTTCCTCTCT
CCTCCCTGGCCAATCTGTTTGAGGGGGAGGATGGCTCCCTTTCGCCCTCACC
GGCTGATGCCAGTCGCCCTGCTGGCCCAGGCGATGGGCGACCAAATCTGCGC
ATGAAGTTCCAGGGCGCCTTCCGCAAGGGGGTGCCCAACCCCATCGATCTGC
TGGAGTCCACCCTATATGAGTCCTCGGTGGTGCCTGGGCCCAAGAAAGCACC
CATGGACTCACTGTTTGACTACGGCACCTATCGTCACCACTCCAGTGACAAC
AAGAGGTGGAGGAAGAAGATCATAGAGAAGCAGCCGCAGAGCCCCAAAGCCC
CTGCCCCTCAGCCGCCCCCCATCCTCAAAGTCTTCAACCGGCCTATCCTCTT
TGACATCGTGTCCCGGGGCTCCACTGCTGACCTGGACGGGCTGCTCCCATTC
TTGCTGACCCACAAGAAACGCCTAACTGATGAGGAGTTTCGAGAGCCATCTA
CGGGGAAGACCTGCCTGCCCAAGGCCTTGCTGAACCTGAGCAATGGCCGCAA
CGACACCATCCCTGTGCTGCTGGACATCGCGGAGCGCACCGGCAACATGAGG
GAGTTCATTAACTCGCCCTTCCGTGACATCTACTATCGAGGTCAGACAGCCC
TGCACATCGCCATTGAGCGTCGCTGCAAACACTACGTGGAACTTCTCGTGGC
CCAGGGAGCTGATGTCCACGCCCAGGCCCGTGGGCGCTTCTTCCAGCCCAAG
GATGAGGGGGGCTACTTCTACTTTGGGGAGCTGCCCCTGTCGCTGGCTGCCT
GCACCAACCAGCCCCACATTGTCAACTACCTGACGGAGAACCCCCACAAGAA
GGCGGACATGCGGCGCCAGGACTCGCGAGGCAACACAGTGCTGCATGCGCTG
GTGGCCATTGCTGACAACACCCGTGAGAACACCAAGTTTGTTACCAAGATGT
ACGACCTGCTGCTGCTCAAGTGTGCCCGCCTCTTCCCCGACAGCAACCTGGA
GGCCGTGCTCAACAACGACGGCCTCTCGCCCCTCATGATGGCTGCCAAGACG
GGCAAGATTGGGATCTTTCAGCACATCATCCGGCGGGAGGTGACGGATGAGG
ACACACGGCACCTGTCCCGCAAGTTCAAGGACTGGGCCTATGGGCCAGTGTA
TTCCTCGCTTTATGACCTCTCCTCCCTGGACACGTGTGGGGAAGAGGCCTCC
GTGCTGGAGATCCTGGTGTACAACAGCAAGATTGAGAACCGCCACGAGATGC
TGGCTGTGGAGCCCATCAATGAACTGCTGCGGGACAAGTGGCGCAAGTTCGG

FIG. 7B

GGCCGTCTCCTTCTACATCAACGTGGTCTCCTACCTGTGTGCCATGGTCAT
CTTCACTCTCACCGCCTACTACCAGCCGCTGGAGGGCACACCGCCGTACCC
TTACCGCACCACGGTGGACTACCTGCGGCTGGCTGGCGAGGTCATTACGCT
CTTCACTGGGGTCCTGTTCTTCTTCACCAACATCAAAGACTTGTTCATGAA
GAAATGCCCTGGAGTGAATTCTCTCTTCATTGATGGCTCCTTCCAGCTGCT
CTACTTCATCTACTCTGTCCTGGTGATCGTCTCAGCAGCCCTCTACCTGGC
AGGGATCGAGGCCTACCTGGCCGTGATGGTCTTTGCCCTGGTCCTGGGCTG
GATGAATGCCCTTTACTTCACCCGTGGGCTGAAGCTGACGGGGACCTATAG
CATCATGATCCAGAAGATTCTCTTCAAGGACCTTTTCCGATTCCTGCTCGT
CTACTTGCTCTTCATGATCGGCTACGCTTCAGCCCTGGTCTCCCTCCTGAA
CCCGTGTGCCAACATGAAGGTGTGCAATGAGGACCAGACCAACTGCACAGT
GCCCACTTACCCCTCGTGCCGTGACAGCGAGACCTTCAGCACCTTCCTCCT
GGACCTGTTTAAGCTGACCATCGGCATGGGCGACCTGGAGATGCTGAGCAG
CACCAAGTACCCCGTGGTCTTCATCATCCTGCTGGTGACCTACATCATCCT
CACCTTTGTGCTGCTCCTCAACATGCTCATTGCCCTCATGGGCGAGACAGT
GGGCCAGGTCTCCAAGGAGAGCAAGCACATCTGGAAGCTGCAGAGCGGCAG
GCGCAGGCTGTGAGGCTCACCGATGTCCCTCCTGACCCTCCCTCCCCGCAG
TGGGCCACCACCATCCTGGACATTGAGCGCTCCTTCCCCGTATTCCTGAGG
AAGGCCTTCCGCTCTGGGGAGATGGTCACCGTGGGCAAGAGCTCGGACGGC
ACTCCTGACCGCAGGTGGTGCTTCAGGGTGGATGAGGTGAACTGGTCTCAC
TGGAACCAGAACTTGGGCATCATCAACGAGGACCCGGGCAAGAATGAGACC
TACCAGTATTATGGCTTCTCGCATACCGTGGGCCGCCTCCGCAGGGATCGC
TGGTCCTCGGTGGTACCCCGCGTGGTGGAACTGAACAAGAACTCGAACCCG
GACGAGGTGGTGGTGCCTCTGGACAGCATGGGGAACCCCCGCTGCGATGGC
CACCAGCAGGGTTACCCCCGCAAGTGGAGGACTGATGACGCCCCGCTCTAG
GGACTGCAGCCCAGCCCCAGCTTCTCTGCCCACTCATTTCTAGTCCAGCCG
CATTTCAGCAGTGCCTTCTGGGGTGTCCCCCCACACCCTGCTTTGGCCCCA
GAGGCGAGGGACCAGTGGAGGTGCCAGGGAGGCCCCAGGACCCTGTGGTCC
CCTGGCTCTGCCTCCCCACCCTGGGGTGGGGGCTCCCGGCCACCTGTCTTG
CTCCTATGGAGTCACATAAGCCAACGCCAGAGCCCCTCCACCTCAGGCCCC
AGCCCCTGCCTCTCCATTATTTATTTGCTCTGCTCTCAGGAAGCGACGTGA
CCCCTGCCCCAGCTGGAACCTGGCAGAGGCCTTAGGACCCCGTTCCAAGTG
CACTGCCCGGCCAAGCCCCAGCCTCAGCCTGCGCCTGAGCTGCATGCGCCA
CCATTTTTGGCAGCGTGGCAGCTTTGCAAGGGGCTGGGGCCCTCGGCGTGG
GGCCATGCCTTCTGTGTGTTCTGTAGTGTCTGGGATTTGCCGGTGCTCAAT
AAATGTTTATTCATTGACGGTGGAAAAAAAAAAAAAAA

FIG. 8

SEQ.ID.NO.12.
Coding sequence for human VR3A+B+ (742 amino acids)

MADSSEGPRAGPGEVAELPGDESGTPGGEAFPLSSLANLFEGEDGSLSPS
PADASRPAGPGDGRPNLRMKFQGAFRKGVPNPIDLLESTLYESSVVPGPK
KAPMDSLFDYGTYRHHSSDNKRWRKKIIEKQPQSPKAPAPQPPPILKVFN
RPILFDIVSRGSTADLDGLLPFLLTHKKRLTDEEFREPSTGKTCLPKALL
NLSNGRNDTIPVLLDIAERTGNMREFINSPFRDIYYRGQTALHIAIERRC
KHYVELLVAQGADVHAQARGRFFQPKDEGGYFYFGELPLSLAACTNQPHI
VNYLTENPHKKADMRRQDSRGNTVLHALVAIADNTRENTKFVTKMYDLLL
LKCARLFPDSNLEAVLNNDGLSPLMMAAKTGKIGIFQHIIRREVTDEDTR
HLSRKFKDWAYGPVYSSLYDLSSLDTCGEEASVLEILVYNSKIENRHEML
AVEPINELLRDKWRKFGAVSFYINVVSYLCAMVIFTLTAYYQPLEGTPPY
PYRTTVDYLRLAGEVITLFTGVLFFFTNIKDLFMKKCPGVNSLFIDGSFQ
LLYFIYSVLVIVSAALYLAGIEAYLAVMVFALVLGWMNALYFTRGLKLTG
TYSIMIQKILFKDLFRFLLVYLLFMIGYASALVSLLNPCANMKVCNEDQT
NCTVPTYPSCRDSETFSTFLLDLFKLTIGMGDLEMLSSTKYPVVFIILLV
TYIILTFVLLLNMLIALMGETVGQVSKESKHIWKLQSGRRRL

FIG. 9

	Water-injected controls	VR3 A+B-	VR3 A-B-	VR3 A+B+
Number of living oocytes	88	9	47	29
Number of dead oocytes	44	90	40	54
Percent Alive	67%	9% (* p<e-17)	54% (p = 0.99)	35% (* p = 5.4 e-6)

FIG. 10A

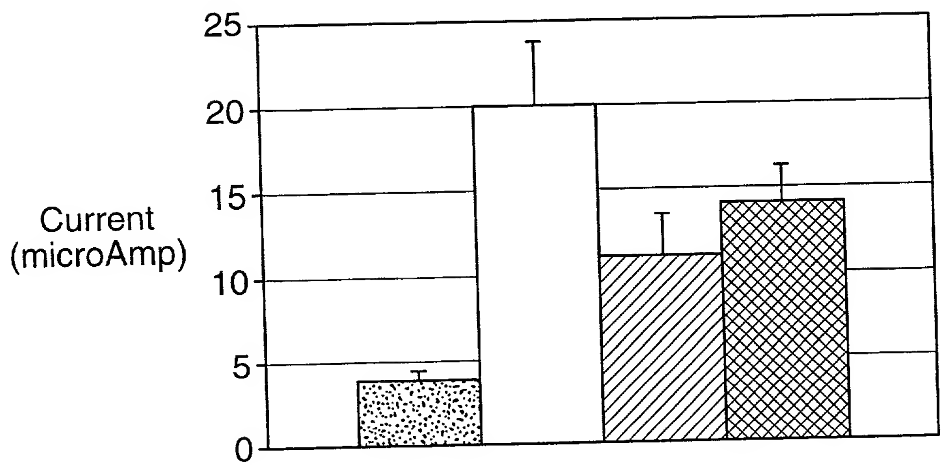

FIG. 10B

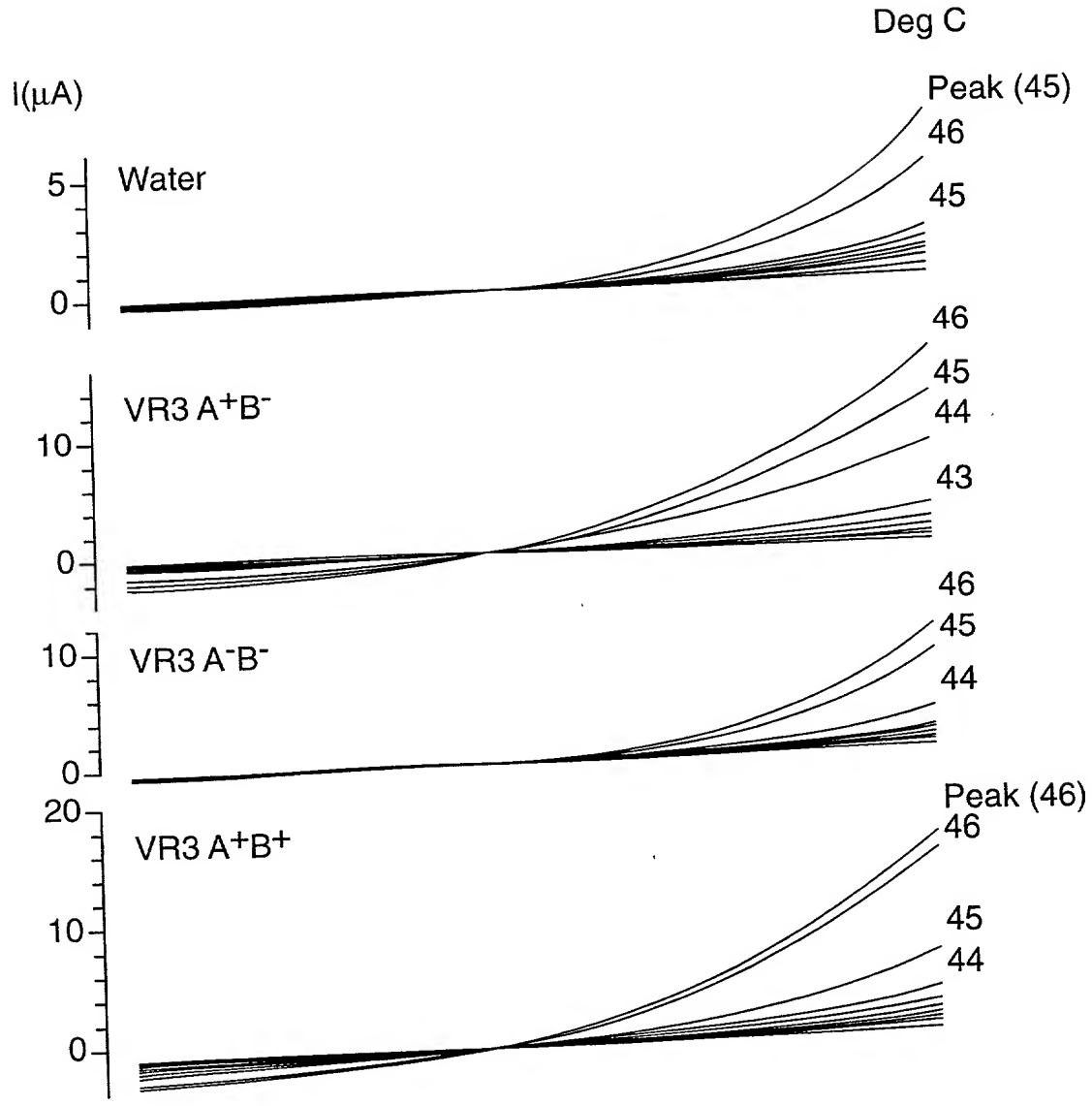
Deg C
I(μA)
Peak (45)
46
45
5
Water
0
46
45
44
43
VR3 A+B-
10
0
46
45
44
10
VR3 A-B-
0
Peak (46)
20
VR3 A+B+
46
45
44
10
0

FIG. 11A

VRI and water

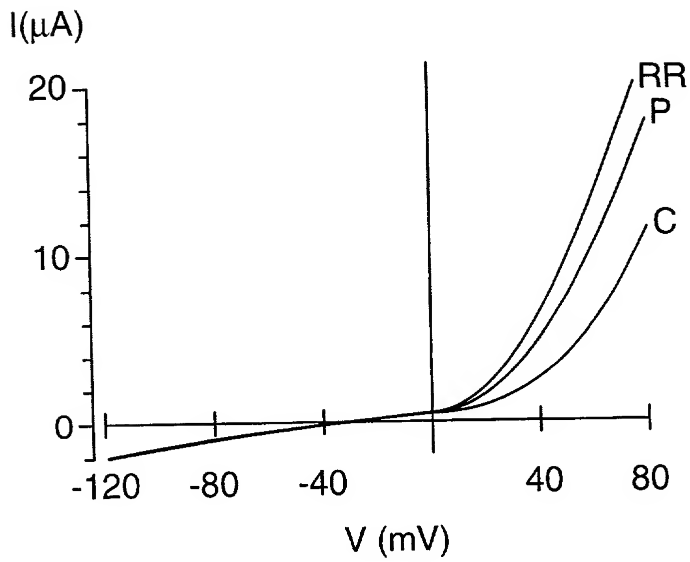

FIG. 11B

VRI and VR3 $A^{+}B^{-}$

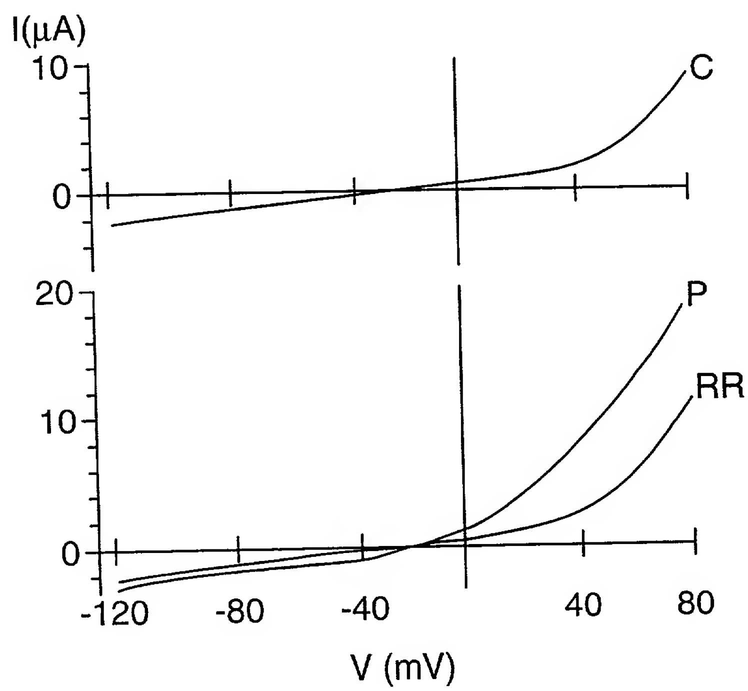

FIG. 12A

VR1 and water

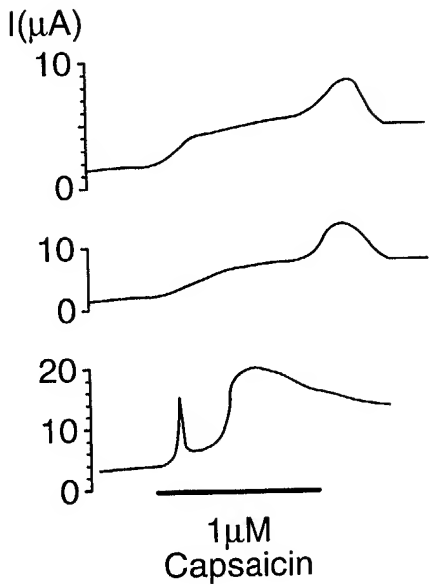

FIG. 12B

VR1 and VR3 $A^{+}B^{-}$

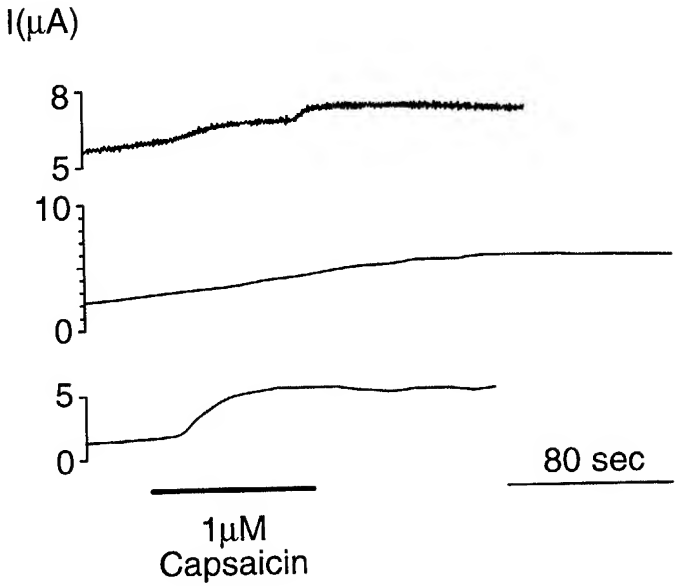

FIG. 13

Tissue or cell type	hVR3 (mean intensity)	hVR1 (mean intensity)
Liver	900+/-50 (p<0.005)	55+/-3 (p<0.05)
Raji lymphoma cell line	255+/-20 (p<0.005)	NS
Spleen	196+/-19 (p<0.01)	NS
Lung	150+/-22 (p<0.01)	NS
DRG	129+/-21 (p<0.025)	90+/-3 (p<0.05)
Ovary	128+/-9 (p<0.0025)	69+/-2 (p<0.0005)
Placenta	120+/-7 (p<0.001)	NS
Trachea	106+/-7 (p<0.001)	54+/-4 (p<0.01)
Small intestine	105+/-3 (p<0.001)	62+/-5 (p<0.01)
Prostate*	72+/-5 (p<0.0025)	38+/-1 (p<0.0005)
Kidney	62+/-4 (p<0.05)	57+/-4 (p<0.005)
Spinal cord	57+/-2 (p<0.00025)	47+/-3 (p<0.005)

Values are the mean intensity of the labeled cRNA hybridizing to the cDNA microarray +/- S.E.M. The mean intensity for cRNAs from all tissues shown were significantly different (p value in the parentheses) from 75% of the control plant cDNA value. Data are averaged from 3-6 experiments. NS: not significantly different form plant gene control (see Luo et al., 1999 for more detailed methods). *Tissue from which the VR3 was cloned.